

MONTHLY WEATHER REVIEW,

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WAR DEPARTMENT,
Office of the Chief Signal Officer,
DIVISION OF

TELEGRAMS AND REPORTS FOR THE BENEFIT OF COMMERCE AND AGRICULTURE

A general summary of the Meteorological Observations taken under the direction of the Signal Service during the month of January, 1874, is presented in the accompanying Charts and Tables.

In reviewing the meteorological condition therein indicated, the most noticeable feature is the excess of mean temperature throughout almost the entire country over that of the corresponding period in previous years, the most marked difference being between the mean temperature of January, 1873, and that of January, 1874.

This average temperature in the several districts, together with the excess, may be found by reference to the table accompanying Chart No. 2, where it will be seen that the excess is greatest near the region of mean low barometer, apparently central over Lower Canada. The area of mean high barometer being central off the South Atlantic coast, the prevailing winds to the west of it were therefore southerly bearing the aqueous vapor from the Gulf of Mexico and Atlantic coast toward the region of low barometer. An excessive humidity in the atmosphere was therefore produced over the greater portion of the United States east of the Mississippi river. The unusual supply of vapor thus diffused over the country prevented a great loss of heat by terrestrial radiation, and tended to increase the mean temperature for the month.

S T O R M S.

The movements of those areas of low barometer which produced a definite cyclonic condition of the atmosphere are traced on Chart No. 1, and are numbered in the order in which they occurred. Although treated of under the general title of storms, the atmospheric disturbance, in several instances, was not sufficiently violent to warrant the use of this term.

The first storm that occurred during the month is of particular interest, as it has been traced directly from the Upper Missouri valley to the Atlantic coast. This storm was preceded by gales on the Pacific coast during the 30th and 31st days of December, and the approach of the atmospheric disturbance was indicated by the rapid fall of the barometer, with heavy rain, at Portland, Oregon, and San Francisco. The southerly winds which prevailed upon the coast show that the centre of the disturbance passed to the eastward north of Vancouver's Island.

The midnight report of January 1st announced an area of low barometer in the Upper Missouri valley, as noted on the Chart. From this point the direction of the storm was

southeastward, following the course of the Missouri river as far south as latitude 45° ; after which its general course was eastward over the mean latitude of 47° . It was accompanied by rain and snow from the Mississippi river to the Atlantic coast, north of the Ohio valley, from the 2d to the 4th of the month. As this area of disturbance passed to the eastward, its velocity increased with a gradual rise of the barometer--conditions which do not usually obtain in storms in this latitude.

It was followed by decidedly cold weather, first in the Northwest and a "Norther" on the coast of Texas, the temperature at Fort Gibson falling from 73° to 15° , and the barometer rising 0.9 of an inch during the night of the 3d. This "Norther" continued, with snow and freezing weather, until the 6th.

II. This storm was first defined in the Gulf of Mexico, its approach being indicated by the general direction of the isothermal lines in the Southern States.

It appears to have had an equatorial origin and to have described the northern half of its parabolic track within the limits of our observation. The general course of the centre of disturbance was parallel to the coast line, and the region of precipitation extended from the Atlantic coast to the Mississippi valley, and from the Gulf to British America. It was this storm which produced the snow and sleet in the Lake region and Ohio valley on the 6th and 7th of the month, and severed the telegraphic communication between the east and west. The form of the area of least pressure during the 7th of the month, and while the storm was passing from North Carolina to Western Pennsylvania, was that of an ellipse with the major axis in the direction of progression. This feature is noted, for the reason that several attempts have been made to show that these storms are *always* elliptical in form, and that the major axis is *always* perpendicular to the course of the storm, whereas, in the present instance, the centre of depression became circular in form as it passed into the St. Lawrence valley, from which region it passed to the northeast over the mean line of atmospheric progression for the eastern portion of the United States.

III. Passed to the north of the United States, and was at no time wholly within the limits of our observation. The centre of depression was approximately marked on each of the tri-daily reports from the afternoon of the 8th to the morning of the 11th, during which time the southern half of this disturbance extended as far south as the Ohio valley and the Middle States, producing rain or snow in these regions and the Northeast.

IV. Originated in the Mississippi valley, and was first marked as central in Missouri on the morning of the 13th. It moved to the eastward with a mean velocity of 50 miles per hour without producing high winds, except on the eastern coast.

During the 15th and 16th of the month a severe storm prevailed on the Pacific coast, extending from central California to the west coast of British America, and the barometer fell to the unusual reading of 29.06 inches at Portland, Oregon.

Reports received from vessels in the Pacific previous to the above dates indicate that this storm existed as a severe northerly gale in latitude $30^{\circ} 18' N.$, longitude $145^{\circ} W.$, January 13th, and as a northeasterly gale in latitude $37^{\circ} 15' N.$, longitude $156^{\circ} 26' W.$, on January 14th, when the barometer fell to 29.46 inches. This storm is not traced upon the chart, because it passed to the north of the United States without any unusual disturbance, except in the Upper Lake region and north of Minnesota, the barometer at Fort Garry falling to 29 inches, the lowest reading noted during the month.

V, VI, VII and VIII developed west of the Mississippi river and moved eastward, accompanied by rain or snow, without producing high winds, the last named presenting the unusual condition of developing and wholly disappearing within the limit of our stations, notwithstanding the atmosphere had assumed a definite cyclonic movement.